

CLAIMS

What is claimed is:

- 1 A method for communicating information in a wireless communication system,
5 the method comprising:
allocating at least one channel of multiple available wireless channels to
be an acknowledgment channel for carrying information between each of
multiple field units and a base station;
10 assigning at least one channel for communicating a data payload between
the base station and a corresponding field unit; and
transmitting acknowledgment information associated with a data payload
over the acknowledgment channel.
2. A method as in claim 1 further comprising the step of:
dividing the acknowledgment channel into multiple time slots.
- 15 3. A method as in claim 2 further comprising the step of:
assigning a time slot of the acknowledgment channel for use by a field
unit to transmit acknowledgment information to the base station.
4. A method as in claim 1, wherein the acknowledgment information is transmitted
20 on an as-needed basis between the base station and corresponding field unit.
5. A method as in claim 1, wherein field units are allocated multiple forward link
channels on an as-needed basis to transmit a data payload from the base station
to a subscriber field unit and a portion of the acknowledgment channel in a
reverse link carries feedback messages to the base station.

6. A method as in claim 2, wherein the data payload includes at least one network message transmitted between processing devices using a network protocol.
7. A method as in claim 1, wherein a first acknowledgment channel is allocated for use in a forward link and a second acknowledgment channel is allocated for use in a reverse link of the wireless communication system.
8. A method as in claim 2, wherein the time slots of the acknowledgment channel repeat on a periodic basis.
9. A method as in claim 2 further comprising the step of:
synchronizing the acknowledgment channel with another channel in a forward or reverse channel of the communication system so that acknowledgment information is transmitted or received in a corresponding time slot.
10. A method as in claim 1, wherein the acknowledgment information indicates that a data payload was properly received.
11. A method as in claim 1, wherein the acknowledgment information indicates that a data payload was not properly received.
12. A method as in claim 2, wherein the time slot includes CRC (Cyclical Redundancy Check) check bits.
13. A method as in claim 2, wherein acknowledgment information is transmitted in at least two time slots from at least two different field units.

14. A method as in claim 2, wherein a time slot is implicitly assigned for use by a field unit based upon an assignment of a corresponding channel for transmitting a data payload from the base station to the field unit.
15. A method as in claim 1 further comprising the step of:
5 assigning a portion of the acknowledgment channel for use by a field unit to transmit acknowledgment information.
16. A method as in claim 3, wherein use of an assigned time slot for transmitting messages in a reverse direction is delayed a preselected amount of time after a traffic channel is allocated for transmitting a data payload.
- 10 17. A method as in claim 1, wherein the information communicated in the wireless system includes at least one network message based on TCP/IP (Transmission Control Protocol/Internet Protocol).
18. A method as in claim 1, wherein at least part of the acknowledgment
15 information is generated at a link layer.
19. A method as in claim 1, wherein at least part of the acknowledgment information is generated at a transport layer.
20. A method as in claim 1, wherein the acknowledgment channel is structured to carry information generated at multiple network layers.
- 20 21. A method as in claim 1, wherein the acknowledgment channel is structured to carry generic payload data.

22. A method as in claim 20, wherein the generic payload data is a maintenance message supporting a link between a field unit and the base station.

23. A method as in claim 20, wherein the generic payload data would otherwise be transmitted over a traffic channel.

5 24. A method as in claim 3 further comprising the steps of:

allocating additional bandwidth to a field unit for transmitting acknowledgment information when throughput capacity afforded by a single time slot is exceeded.

10 25. A method as in claim 23, wherein the additional bandwidth is at least part of a traffic channel.

~~26.~~ A method for communicating information between transceivers of a wireless communication system, the method comprising the steps of:

15 allocating multiple traffic channels for carrying data messages between transceivers;

at a transceiver that transmits data messages over a traffic channel to a target transceiver, intercepting and decoding data messages intended to be transmitted over a traffic channel to determine their content; and

20 in lieu of transmitting selected data messages over a traffic channel, encoding the selected data messages into corresponding substitute messages and transmitting the substitute messages over a channel to a target transceiver, the channel structured so that a target transceiver can reconstruct original data messages based on receipt of the substitute messages.

27. A method as in claim 26, wherein the channel is a shared channel.

28. A method as in claim 27, wherein the shared channel is used for communicating acknowledgment information.

29. A method as in claim 27 further comprising the steps of:

5 at a transceiver, decoding a data message intended to be transmitted to a target transceiver over a traffic channel;

determining that the data message includes acknowledgment information; and

10 in lieu of transmitting the data message over a corresponding traffic channel, encoding the acknowledgment information and transmitting it in an assigned time slot of the shared channel.

30. A method as in claim 26, wherein a data message intended to be transmitted over a traffic channel includes at least a portion of a TCP/IP (Transmission Control Protocol/Internet Protocol) data packet.

31. A method as in claim 26 further comprising the steps of:

15 generating network packets at a first digital processing device in communication with a first transceiver;

from the first digital device, forwarding the generated network packets to a first transceiver where they are converted into data payloads;

20 from the first transceiver, transmitting the data payloads to a target receiver;

at the target transceiver, processing a received data payload to retrieve the network messages generated by the first digital processing device;

from the target transceiver, forwarding the retrieved network messages to a second digital processing device in communication with the target transceiver.

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32. A method as in claim 27, wherein the shared channel is partitioned into time slots, each of which is assigned for use by a transceiver to support acknowledgment message transmissions.
33. A method as in claim 27 further comprising:
5 reducing a data message in size to form a substitute message and transmitting the substitute message over the shared channel.
34. A method as in claim 27 further comprising the step of:
 dividing the shared channel into time slots.
35. A method as in claim 34, wherein a time slot is structured to include a data field
10 of bits that indicate an ACK (Acknowledge) or NAK (No Acknowledge) message.
36. A method as in claim 35, wherein the ACK or NAK message is originally generated at a network layer.
37. A method as in claim 34, wherein the time slot includes network packet
15 information of a layer 2 ACK (Acknowledge) or NAK (No Acknowledge).
38. A method as in claim 34, wherein the time slot includes layer 4 session source information identifying a transport layer session to which a network packet pertains.
39. A method as in claim 34, wherein the time slot includes CRC (Cyclical
20 Redundancy Check) check bits.

40. A method for communicating information in a wireless communication system,
the method comprising:

5 allocating at least one channel of multiple available wireless channels to
be a shared feedback channel for carrying feedback information between each of
multiple field units and a base station;

assigning at least one channel for communicating a data payload between
the base station and a corresponding field unit; and

transmitting feedback information associated with a data payload over
the feedback channel.

10 41. A method as in claim 40 further comprising the step of:
dividing the feedback channel into multiple time slots.

42. A method as in claim 41 further comprising the step of:
assigning a time slot of the feedback channel for use by a field unit to
transmit feedback information to the base station.

15 43. A method as in claim 40, wherein the feedback information is transmitted on an
as-needed basis between the base station and corresponding field unit.

20 44. A method as in claim 40, wherein field units are allocated multiple forward link
channels on an as-needed basis to transmit a data payload from the base station
to a field unit and a portion of the feedback channel in a reverse link carries
feedback messages to the base station.